WHAT IS CLAIMED IS:

1. A method (90) for processing video signals in a video-on-demand system (10) comprising:

reserving (91) a predetermined amount of bandwidth in one or more multiplexers (21-24) of a node group to future transcoding;

assigning (92) one or more new video sessions to one or more unused slots in each multiplexer (21-24) of the node group until all unreserved bandwidth is allocated; and

routing (93) one or more subsequent new video sessions through a central transcoder (15) after all unreserved bandwidth of a node group is allocated.

2. The method (90) according to claim 1, further comprising:

assigning (94) bandwidth that becomes available from one or more terminated video sessions on a given multiplexer (21-24) in the node group for use by the central transcoder (15) to form a transcoded group of channels for the given multiplexer (21-24).

3. The method (90) according to claim 2, wherein a transcoded group of channels includes a statistical multiplexed group of channels.

4. The method (90) according to claim 1, further comprising:

expanding (95) an existing transcoded group of channels output by the central transcoder (15) to a given multiplexer (21-24) in the node group using bandwidth from one or more terminated video sessions on the given multiplexer (21-24).

5. The method (90) according to claim 1, further comprising:

converting (96) a video session from a non-transcoded service to a transcoded service during a trick play transition.

6. The method (90) according to claim 1, further comprising:

converting (96) a video session from a transcoded service to a non-transcoded service during a trick play transition.

7. The method (90) according to claim 5, wherein a trick play transition includes a transition from a playback operation to an operation selected from the group of: fast-forward, rewind and pause.

8. The method (90) according to claim 6, wherein a trick play transition includes a transition from a playback operation to an operation selected from the group of: fast-forward, rewind and pause.

9. A method (90) for processing a plurality of channels in a communications system (10) comprising:

reserving (91) a predetermined amount of bandwidth in a multiplexer (21-24) to future compression or transcoding; and

performing (93) transcoding or compression on one or more new channels after all unreserved bandwidth of the multiplexer (21-24) is allocated.

10. The method (90) according to claim 9, further comprising:

assigning (92) one or more new channels to one or more unused slots in the multiplexer (21-24) until all unreserved bandwidth is allocated before performing said transcoding.

11. The method (90) according to claim 9, further comprising:

forming (49) a transcoded or compressed group of channels for the multiplexer (21-24) from bandwidth that becomes available from one or more terminated channels in the multiplexer (21-24).

12. The method (90) according to claim 11, wherein the forming includes creating a compressed group of channels.

13. The method (90) according to claim 12, wherein the creating includes creating a single transport stream at a constant bit rate for delivery to an edge device (14a-c) from all services in the compressed group of channels.

14. The method (90) according to claim 12, wherein the creating includes:

creating a plurality of single transport streams during transcoding, each having a variable bit rate that adds up to a total bit rate that will fit into the multiplexer (21-24); and

multiplexing the plurality of single transport streams at the edge device (14a-c) into one transport stream before modulating by the edge device (14a-c).

15. The method (90) according to claim 9, further comprising:

expanding (95) an existing transcoded group of channels associated with the multiplexer (21-24) using bandwidth from one or more terminated channels assigned to the multiplexer (21-24).

16. The method (90) according to claim 9, further comprising:

converting (96) a channel from a non-transcoded service to a transcoded service during a user initiated interruption in the channel.

17. The method (90) according to claim 9, further comprising:

converting (96) a channel from a transcoded service to a non-transcoded service during a user initiated interruption in the channel.

18. The method (90) according to claim 16, wherein a user initiated interruption in the channel includes a transition from a playback operation to an operation selected from the group of: fast-forward, rewind and pause.

19. The method (90) according to claim 17, wherein a user initiated interruption in the channel includes a transition from a playback operation to an operation selected from the group of: fast-forward, rewind and pause.

20. An apparatus (10) for processing video signals comprising:

a central transcoder (15);

one or more video servers (12a-c), each outputting one or more video signals requested by users;

one or more edge devices (14a-c) each outputting a node group of signals for transmission to each of the users, wherein each edge device (14a-c) includes one or more multiplexers (21-24), and each multiplexer (21-24) includes a plurality of channel slots;

a network (13) coupling the one or more video servers (12a-c) to the one or more edge devices (14a-c) and the central transcoder (15); and

a processor (11) assigning each of the one or more video signals output by the one or more servers (12a-c) to one channel slot of the one or more channel slots in one multiplexer (21-24) of the one or more multiplexers (21-24) in one edge device (14a-c) of the one or more edge devices (14a-c), said processor (11):

(i) reserving a predetermined amount of bandwidth in each of the one or more edge devices (14a-c) to future transcoding,

(ii) assigning one or more new user requested video signals to one or more unused channel slots in a particular multiplexer (21-24) of the one or more multiplexers (21-24) of a particular edge device (14a-c) of the one or more edge

devices (14a-c) until all unreserved bandwidth is allocated in the particular edge device (14a-c) of the one or more edge devices (14a-c), and

(iii) routing one or more subsequent new user requested video signals that is designated for a particular edge device (14a-c) of the one or more edge devices (14a-c) through the central transcoder (15) after all unreserved bandwidth of the particular edge device (14a-c) of the one or more edge devices (14a-c) is allocated.

21. The apparatus (10) according to claim 20, wherein said processor (11):

assigns bandwidth associated with a channel slot that becomes available from one or more terminated video sessions on a given multiplexer (21-24) of the one or more multiplexers (21-24) in a given edge device (14a-c) of the one or more edge devices (14a-c) for use by the central transcoder (15) to form a transcoded group of channels for the given multiplexer (21-24).

22. The apparatus (10) according to claim 21, wherein a transcoded group of channels includes a statistical multiplexed group of channels.

23. The apparatus (10) according to claim 20, wherein said processor (11):

expands an existing transcoded group of channels output by the central transcoder (15) to a given multiplexer (21-24) of the one or more multiplexers (21-24) in a given edge device (14a-c) of the one or more edge devices (14a-c) using bandwidth from one or more terminated video sessions on the given multiplexer (21-24).

24. An apparatus (10) for processing video signals output by one or more video servers (12a-c), each outputting one or more video signals requested by one or more users, said apparatus (10) comprising:

a central transcoder (15);

one or more edge devices (14a-c) each outputting a node group of signals for transmission to each of the one or more users, wherein each edge device (14a-c) includes one or more multiplexers (21-24), and each multiplexer (21-24) includes a plurality of channel slots; and

a processor (11) assigning each of the one or more video signals to one channel slot of the one or more channel slots in one multiplexer (21-24) of the one or more multiplexers (21-24) in one edge device (14a-c) of the one or more edge devices (14a-c), said processor (11):

(i) reserving a predetermined amount of bandwidth in each of the one or more multiplexers (21-24) in each of the one or more edge devices (14a-c) for future transcoding; and

(ii) routing one or more new user requested video signals designated for a given edge device (14a-c) of the one or more edge devices (14a-c) through the central transcoder (15) after all unreserved bandwidth of the given edge device (14a-c) is allocated.

25. The apparatus (10) according to claim 24, further comprising:

a network (13) coupling the one or more video servers (12a-c) to the one or more edge devices (14a-c) and the central transcoder (15).

26. The apparatus (10) according to claim 24, wherein the processor (11):

assigns one or more new requested video signals to one or more unused slots in a given multiplexer (21-24) of the given edge device (14a-c) until all unreserved bandwidth in the given edge device (14a-c) is allocated before routing the one or more new user requested video signals through the central transcoder (15).

27. The apparatus (10) according to claim 24, wherein the central transcoder (15):

forms a transcoded group of channels for a given multiplexer (21-24) from bandwidth that becomes available from one or more terminated video sessions in given multiplexer (21-24).

28. The apparatus (10) according to claim 27, wherein the central transcoder (15) forms a statistical multiplex group.

29. The apparatus (10) according to claim 28, wherein the central transcoder (15) forms the statistical multiplex group by creating a multi-program transport stream at a constant bit rate for delivery to the edge device (14a-c) of the given multiplexer (21-24) from all services in the statistical multiplex group.

30. The apparatus (10) according to claim 28, wherein the central transcoder (15) forms the statistical multiplex group by creating a plurality of single-program transport streams during transcoding, each having a variable bit rate that adds up to a total bit rate that will fit into the given multiplexer (21-24), and the edge device (14a-c) of the given multiplexer multiplexes the plurality of single-program transport streams into a multi-program transport stream.